PRINCIPES

Journal of the Palm Society

Photo by Stanley Kiem

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THE PALM SOCIETY

A non-profit voluntary association primarily engaged in the study of the palm family in all its aspects throughout the world.

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COVER PICTURE: *Areca triandra*—a specimen at Castleton Gardens in Jamaica. Native in Asia. This palm makes several green stems to 10 ft. or more. Pinnae broad and bright green, the terminal ones 2-lobed. Mature fruit red and oblong.

Effective April 17, 1957 the Society will have three new Officers and a new Editor of its publications. This matter is dealt with in some detail on pp. 72-73, this issue of PRINCIPES.

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Papers and photographs intended for publication in PRINCIPES should be addressed to our new Editor, Dr. Harold E. Moore, Jr., Bailey Hortorium, Cornell University, Ithaca, N. Y.

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At February 20th, 1957 the Society had 251 members in the United States and 24 other lands. This is an increase of only 30 members since we last reported three months ago, but though the number is small it is large in terms of percentage increase: nearly 14%, which would be at the annual rate of 56%. We have never put on any drive or any sustained organized effort to obtain new members. There would be some point in doing it, for our per-member costs are now excessively high; they are approximately ten dollars annually for every member. With an approach to the 1,000-member mark, our annual per-member costs could probably be more than halved.

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So recently as last September we were deploring in these pages that we had "not one member in India or in the entire continent of Africa." India is still providing us with no members, but we now have two in Africa: one in the Gold Coast and one in Kenya. "If any of your members come to Kenya," writes Mr. H. A. Delap, "let me know." His telephone, just in case, is Donyo Sabuk 6Y4, Thika, Kenya; but we can assure Mr. Delap that this mention is not likely to result in an avalanche of telephone calls.

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The Bylaws of the Society provide for a Biennial Meeting of the Members rather than an annual one. The next regular meeting, according to the provisions of those Bylaws, will take place on the third Tuesday of April, 1958. Special meetings of the members may be called at any time in the discretion of the President.

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Several members have suggested that the Society should organize annual pilgrimages or excursions to various palm-

growing regions in the United States and abroad. Nominated places have been Miami, Fort Myers, Los Angeles, Nassau, Cuba, Mexico, Jamaica, Trinidad, Hawaii and even Brazil. Certainly the notion has its merits, but the Society should first acquire many more members in order to increase the likelihood of having enough participants in any such extended safari. Some of us, no doubt, hanker after Madagascar, but it seems probable that these aspirations will be confined to hankering—which is easier and less expensive than going there.

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English lacks a one-word term signifying "palm fancier," and besides nobody wants to go about the world blurting out "I'm a palm fancier" at the drop of a hat. We should coin a word. One occasionally sees the word "palmologist" applied to the scientific investigator of the palms, but a good many scientists avoid it as too contrived and of doubtful etymological standing, hardly more than a cut or two above "mixologist" for bartender. Good or not, it is not intended to mean the palm fancier. Two good English words that would do for this fine fellow are "palmist" and "palmer," but both have been preempted; the former is a soothsayer; the latter is a pilgrim, or else he is a card sharp. In these straits we should coin "palmateer." Even though it has a jaunty sound, with overtones of recklessness, it is still fairly mellifluous and its meaning would be apparent to highbrows, lowbrows and middlebrows alike. We could, of course, patent it, thus reserving the right to deny its use to anyone not a member of this Society; but at the moment it seems easier to offer it duty-free to the universe, with or without background music consisting of a few stridentulous bars from the William Tell Overture.

The late eminent Dr. Fairchild was a great hand for tasting strange fruits, nuts and other even stranger delicatessen, thus learning much and surviving all the hazards. In modified emulation of that revered man, your editor recently took up the chewing of the betel-nut, not down in the barrio but at Chapman Field. Mr. Harold F. Loomis, while pointing out a young fruiting specimen of the betel-nut palm (*Areca Cathecu*), split lengthwise one of the green fruits with a sharp penknife and proffered a split half to the aforesaid editor who at once thoughtfully chewed and swallowed all of it. The outcome was disillusioning; instead of a bite like that of a tiger, there was no bite; it was insipid. Perhaps mature and mixed with lime, Piper and anonymous seasonings it would make a very fine and inspiring chew, at least as invigorating as a quid of Honest Scrap. Chewed plain and green, however, it didn't even taste scientific.

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This number of PRINCIPES chiefly contains matter that either touches on questions of hardiness in the palms or deals altogether with those and related questions. Our members in tropical lands are not concerned with threats of cold injury, and hence, apart from any mild curiosity about the phenomenon of cold, may find the contents of this issue rather tedious. They may be assured, however, that the subject of cold hardiness will not always predominate in these pages, for our dedication to the palms is to the family as a whole and most certainly not confined by considerations of geography or climate. On a different score, other members may think this issue too elementary and uninformative for advanced plantsmen and botanists; but here again we would assure these others that the future contents will not remain in a static pattern

and that the fare will not always be too thin for their nourishment. If the beginner seems to be favored in this issue, perhaps it will be the informed student in the next; but the aim is to strike a good balance, and in fact a better one than we have yet achieved—for the Society is made up of members with diverse interests and degrees of knowledge: botanists, biologists, nurserymen, gardeners both plain and fancy, and all those whose interests divide or merge in one phase or another of palm study and culture.

New Officers of the Society

A Message from the President

First it is necessary to give some of the background and to cite certain facts that have led to the accession of three new Officers and a new Editor of PRINCIPES in place of those now holding the posts. (These changes will be effective April 17, 1957).

1. The Society was informally organized on November 19, 1955 and subsequently functioned without any Officers until April 17, 1956. On my own initiative, but with the encouragement of other members, I undertook to carry on the work during that officerless period of five months. It soon became apparent that a seven-day work week at full time was required unless the task were to be haphazard and slacked.

2. A meeting of the members was held on April 17, 1956 for the adoption of a Constitution and Bylaws, and for the election of Officers and Directors. The objects were accomplished. Among the Officers chosen, all of whom and the Directors as well were elected for a term of two years, I was elected President, but I was obliged to state that I could not see my way clear to continue with the work for a further period of more than one year—this because of other engagements that could not be indefinitely deferred.

3. After the election of Officers we found ourselves lacking too many facilities at Daytona Beach for conducting the Society's affairs to the best advantage, and the handicaps imposed severe penalties on the efforts to advance its interests. Also it became increasingly imperative that something be done about a better division of the work so as to increase efficiency and quality of performance.

4. With all the foregoing considerations in mind, I made vigorous attempts to find candidates willing to succeed to the posts held in the Daytona Beach area, but with only frustrating results at first. Success came in the end to a degree that exceeded even the most sanguine expectations. This can best be made clear, and so can the procedure, by the memorandum, slightly emended, reproduced below.

January 3, 1957

To the Directors:

My communication of October 6, 1956 stated that we were faced with the necessity of naming a new President and of finding someone willing to serve as Editor of our publications; also, by implication, of naming certain other Officers to replace those in the Daytona Beach area for the reason that this location had proved to be, if not a dead end, not the best for conducting the Society's affairs. All the difficulties have been resolved, subject only to the appointment by the Directors of two Officers to posts that will shortly be vacated.

I reached the conclusion, finally, that Dr. Walter H. Hodge and Dr. Harold E. Moore, Jr., would be ideally qualified to serve as President and as Editor, re-

spectively, provided they could be induced to accept. The everyday work of the Society, however, had increased to the point where it would impose too heavy a burden upon them unless someone able and willing to perform the greater part of the workaday tasks could be found. Since the Bylaws empower the President to engage the services of a paid Executive Secretary should necessity arise, I outlined the matter to Mrs. Lucita H. Wait and asked her if she would consider the position for a very nominal salary. Luckily for us, Mrs. Wait accepted this proposal for the one-year period to begin April 17, 1957. She is not only highly capable but has been an enthusiastic supporter of the Society ever since its inception.

I then went to see Dr. Moore at Ithaca and subsequently Dr. Hodge at Kennett Square, Pennsylvania, unfolding our problems to both of them. Dr. Moore, though facing a formidable work schedule, consented to take over as Editor next April 17th, which can only mean that the work of the Society will gain in importance, prestige and standing. Dr. Hodge, after my departure, wrote his acceptance of my nomination of him for President, and remarked: "My activity with palms is of necessity so casual that I would not feel justified in taking over this task without knowing that at least one real palm specialist was in a place of prominence (officer-wise) in the Society. I know that you will indicate my feeling to the Directors of the Society."

Nevertheless Dr. Hodge, formerly with the Department of Agriculture and now head of the Department of Education at Longwood Gardens, is eminently well qualified for the post of President. He has studied and collected palms in South America and has maintained a great interest in them; and quite apart from that, he is a first-rate man who will reflect credit upon the Society. Both he and Dr. Moore were much influenced by the fact that Mrs. Wait is to be the Executive Secretary.

Obviously it would be highly preferable to have several of the operating officials in the same city or area. The Treasurer should be resident in or near the Miami area, which is already the case with Dr. Ledin who will continue as Vice-President, and with Mrs. Wait. In connection with that, I wish to nominate Mr. Nat J. De Leon for Treasurer. Mr. De Leon, presently in charge of the horticultural work at the Parrot Jungle, is a very able young man with an active interest in cultivating palms and in introducing new ones. He has consented to the nomination.

All three of the present Officers living in the Daytona Beach area, namely Mrs. Hargert the Secretary, Miss Martin the Treasurer, and myself, now submit by this means our several resignations to take effect on April 17, 1957 at 2 p. m., so as to make way for the changes already outlined. We are not bound by any kind of red tape to submit resignations individually; nor is it necessary for the Directors to take any action on these resignations. I shall only add to this my devout thanks to Mrs. Hargert and to Miss Martin for their generous and valuable services, in which sentiments all the members certainly would concur.

Dr. Moore and Mrs. Wait will be appointed to their posts by the President, as authorized in the Bylaws. The President and the Treasurer, however, must be appointed in case of a vacancy by majority vote of the Directors. Accordingly you are being asked to vote for Dr. Hodge for President and also as a Director; and for Mr. De Leon for Treasurer; each office to continue for one year from April 17, 1957, at the end of which period Officers and Directors will be elected at the biennial Meeting of the Members required by the Bylaws.

I believe that you will agree that the Society's future now looks more promising than at any other time. There is every reason to think that its stature will increase and that all who work with the palms will derive commensurate benefits.

Please use the enclosed ballot and return via air if not living in Florida.

The sequel to that communication was this: the Directors balloted in favor of the nominees without a dissenting vote. The posts of Editor and Executive Secretary are being filled by presidential appointment. The Society is indeed fortunate in having its affairs in the hands of persons of such high caliber. Its work will gain in importance and win wider recognition; and perhaps, allowing time for growth in membership, the scope of the work may be extended.

D. S.

WALTER HENRICKS HODGE

President-elect

Dr. Hodge was born in 1912 at Worcester, Massachusetts. He received the degrees of A.B. at Clark University; S.M., University of Massachusetts; A.M. and Ph.D., Harvard. He has occupied teaching posts in Botany at Harvard and other institutions. In 1943-1945 he was headquartered at Lima, Peru, as Botanist, Cinchona Mission, U. S. Office

of Economic Warfare. In 1953-1955 he was Principal Botanist and Assistant Head, Division of Plant Exploration and Introduction, U. S. Department of Agriculture, a post he left to accept his present position as Head of Department of Education and Research at Longwood Gardens, Kennett Square, Pennsylvania (these are the fabulous gardens established by the late Pierre S. du Pont at his country estate, "Longwood," not far from Wilmington, Delaware). Since 1932 Dr. Hodge's field experience abroad has been quite extensive, at times taking him for extended periods to Quebec, Dominica and other of the Lesser Antilles, Bermuda, Trinidad, British Guiana, Cuba, Peru, Colombia, Ecuador, Panama, Mexico, Honduras, Union of South Africa, Swaziland, Northern and Southern Rhodesia, and Nyasaland. A prolific writer, he has been a frequent contributor of horticultural and other articles to numerous periodicals, among them *Nature Magazine, Natural History, National Horticultural Magazine, Scientific Monthly, Journal of the New York Botanical Garden,* and *Economic Botany* of which he is an Advisory Editor.

R. Bruce Ledin
Vice President

Dr. Ledin has occupied this office since April 17, 1956 and is continuing in it. He was born in 1914 at Minneapolis, Minnesota. Majored in Botany at University of Minnesota and obtained A.B. degree in 1939. Did graduate work in Botany at Indiana University, 1940-1943. Finished this work with a Ph.D. degree in 1949-1950. During the War he was with Columbia University on an O.S.R.D. project at Ft. Benning, Georgia. Came to Miami in 1946 and taught Botany at the University of Miami until 1951. During this period he studied the native plants of South Florida, especially in connection with the relationship of the Floridian flora to that of the West Indies. From 1951 on he has been a horticulturist with the University of Florida Sub-Tropical Experiment Station in Homestead, working on various aspects of tropical and subtropical fruit plants such as mango, lychee,

and Barbados cherry. During 1957 he is serving as President of the Florida Mango Forum. Palms of 121 species at the Experiment Station come under his close observation.

Lucita Hardie Wait
Newly-appointed
Executive Secretary

Mrs. Wait was born in Brazil, of North American parents. She attended Mackenzie College in Sao Paulo, and then attended college in Texas and Virginia. In 1927 she was married to Charles Edmund Wait, of Knoxville, Tennessee. Coming to Florida in 1930,

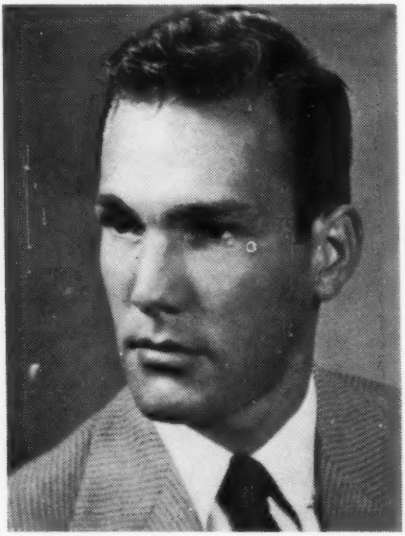
she was delighted to see once more the subtropical plants she had known as a child; the following year the family settled in Coconut Grove. Inheriting an abiding interest in plants from her grandfather, a sugar planter, and her mother, an accomplished amateur gardener, she went into garden club work,

lecturing, writing, and then to the position of curator of the Palm Products Museum, librarian, and editor of the Bulletin, at Fairchild Tropical Garden, 1951-56. Her South American background, plus close study of the palm collection at Fairchild Garden, created a keen interest in this princely plant family. She was among the first half-dozen persons to become members of The Palm Society.

Nat J. De Leon

Treasurer-elect

Mr. De Leon migrated from Pennsylvania to Miami over ten years ago. A graduate of the University of Miami, and a member of a number of horticultural societies, he is at present engaged in horticultural work at the Parrot Jungle, one of the wonder sights of Florida. He became keenly interested in the palms some five years ago, "for no group of plants suggests the tropics more than the palms, and in this Temperate Zoned country of ours South



Florida is the only area where any variety of tropical palms can be grown." He has been active in introducing seeds of new palms for trial in South Florida.

Harold E. Moore, Jr.

Editor of the Society's Publications

following this issue of Principes. Born to the warmth of July, 1917, in Massachusetts, Dr. Moore has been enamored of the tropics since teenage reading about the South Seas proved a solace in New England winters. A graduate of the University of Massachusetts ('39) and Harvard (Ph.D., '42), he has been Assistant Professor and now Associate Professor of Botany at the L. H. Bailey Hortorium of Cornell University since 1948. There he served an apprenticeship in the study of palms with Dr. L. H.

Bailey and continues Dr. Bailey's work with these plants. In addition, he revises other families of plants for a forthcoming Hortus III, including the Gesneriaceae which stimulated a handbook of the cultivated gesneriads currently being published by Macmillan Company. Botanical field study has taken him to most parts of Mexico for a total of about three years since 1940, and for periods of weeks or months to Guatemala, Honduras, Costa Rica, Panama, Cuba, Bahamas, and Florida. In the summer of 1950 and again, as a Fellow of the John Simon Guggenheim Memorial Foundation, from October, 1955 to November, 1956, he visited European herbaria studying palm specimens. In 1954 he received the Founders Medal of the Fairchild Tropical Garden for his work with the palms.

Cold Tolerance of the Palms in Italy

A Letter to the Editor from Dr. Harold E. Moore, Jr.

It's almost a year now since I first saw palms with snow on them. Ever since that time I have intended to write you a note with some observations on how the palms fared during the excessively cold winter of last year in Italy. I've been long on intention and short on performance. The recent issue of PRINCIPES with its photographs of snow-laden palms in Japan prompts me to write you informally about Italy.

I arrived in Florence last year on January 15th, prepared to spend several months in the study of Odoardo Beccari's collections of palm specimens now housed in the herbarium of the Botanical Institute at the University of Florence. After several weeks of cold gray weather in Belgium, I had looked forward to the traditionally bright Italian skies. Nothing of the sort met me, however. The first two weeks were a continuation of the cold and wet, and precisely on the first of February the snows that were to continue off and on for three weeks began to fall. During that time the temperatures ranged from -5° to -10° centrigrade or 22° to 15° Fahrenheit. The ground was snow-covered and frozen for at least a few inches. The one Italian word that I shall never forget is the word for cold because one heard it on every street corner, in every salutation, in every conversation. According to some of my Italian friends and the newspapers, it was the coldest winter that inhabitants of Italy, at least the southern part, could recall. Heavy snows in the mountains of the south required organization of an airlift to get food, clothing, and fuel into the isolated villages. We saw newsreels of Rome and Naples with snow on the streets and one of the

cameramen's favorite targets seemed to be palm trees with a white frosting.

The route between the house in which I stayed and the herbarium took me around three sides of the botanical garden (Giardino dei Semplici) four times a day. A number of palms have been growing in this garden for many years, so I had an excellent opportunity to keep an eye on them. The variety is not great: *Chamaerops humilis, Phoenix canariensis, Trachycarpus Fortunei, Washingtonia filifera, Sabal* sp., and with them some very large cycads. In the courtyard of the Institute there stand two well-grown fruiting specimens of *Butia capitata.*

One of the nurserymen whom I met at Pistoia, the center of the nursery trade in that part of Italy, told me that ordinarily a "dry" snow did not affect the palms and other more tender shrubs, but that a "wet" snow could do considerable damage. Since our first snow was indeed a "dry" one, I anticipated that the palms might not show any effect, but as the cold continued I began to wonder just how they would stand it.

During all the three weeks of cold there was no marked change in the palms. The pinnae of *Butia* curled somewhat and were more rigid but were otherwise unchanged. It was not until after the cold that damage could be assessed.

Except for *Phoenix canariensis,* time brought no further change. The *Chamaerops, Trachycarpus, Sabal, Washingtonia,* and *Butia* seemed quite unaffected. The very few specimens of *Phoenix* in Florence, however, rather soon showed the effects of cold once more clement weather arrived. The entire crowns turned brown and until I left I saw no evidence of new growth. An occasional stem of *Chamaerops* or *Trachycarpus* looked as though it had succumbed, but there was relatively little permanent damage in Florence. Early in March I had occasion to drive to the coast at Viareggio and back by way of Lucca. The same situation was evident throughout the route. Everywhere, except along the very coast at Viareggio, the trees of *Phoenix* appeared to be completely dead, and an occasional *Chamaerops* or *Trachycarpus* similarly had turned brown. Apart from this I noted little damage.

In July, I again visited Viareggio. The *Phoenix* were then regaining their beauty; the brown and unsightly older leaves had been trimmed and the younger leaves and new growth were in excellent condition.

Most surprising to me was the survival of the seedlings of the *Butia* in the Institute courtyard. Many of these were growing in the old bases of the leaves where the seeds had lodged. They seemed to suffer no damage at all and when I left in late July were as green and thrifty as when I first saw them in January. The leaves of the old plants of *Butia* regained their usual habit as soon as the cold had stopped.

It would have been interesting to revisit the Riviera of France and Italy along which I passed just before the cold. Unfortunately, circumstances didn't permit my return there so that I can't report on some of the more tender things that are occasionally seen at Cannes, Nice, and in some private gardens along the coast. Nor could I see what happened to the long avenues of *Phoenix canariensis* that lead to estates between Cannes and Toulon in southern France.

Although time softens the misery of those three weeks in Florence, there were many moments when, shivering despite seven layers of woollen clothing and the insufficient heat from a single radiator in a great high ceilinged room, I wished that I might have been pursuing my study of palms in Florida. This year my fortune is better and I expect to have that privilege during the month of February. I trust that after that visit I can report on something, perhaps not more interesting but at least less reminiscent of discomfort than the effect of cold in Italy.

Winter Protection of Palms in Marginal Areas

WARREN J. DOLBY

(The author's palms are cultivated at his home in Richmond, California, not far from San Francisco.)

For many gardeners the greatest satisfaction comes from successfully growing and bringing to maturity the unusual or rare plant—the specimen that is not generally grown in his particular area. This striving for the unusual often entails bringing into the garden plant material from more temperate, adjacent zones and introducing it into a marginal climate where growing becomes a real challenge. The palm enthusiast too, is frequently tempted to try palms that really are at their best in a neighboring zone, but which with some assistance might be adapted to his own climatic conditions. With careful selection of planting site, special winter care, along with real understanding and perseverance many palm collections might successfully be expanded beyond their present climate-imposed limitations. The venture into marginal gardening will, of course, not necessarily mean the same thing to every gardener, although many of the problems encountered will be similar. To some it could mean growing a Roystonea in upper Florida, to others pampering a Palmetto in Virginia, raising a Trachycarpus on the warm coast of Scotland, or as in my own case, growing Howeas and Archontophoenix in my garden overlooking San Francisco Bay.

During the summer season the challenge of marginal palms may not be very great. It is usually during the winter, however, that the odds against success are greatest and the gardener's ingenuity and planning become the critical factor. Success or failure during the winter months is often determined by preparations made well in advance of the arrival of adverse weather. One of the first considerations to be made before introducing doubtful specimens into a marginal area should be the selection of a planting site for the new palms. A careful observation of any garden usually reveals that it is made up of not one climate but of several often subtle variations on one climate. In fact most home grounds are composed of several small climates: some areas that are cooler and others that are warmer, some that are exposed and others that are sheltered. Modifications of climate are often affected by the protection of buildings, by a canopy of large trees, or by the contour of the land itself, all resulting in planting sites that have a climate appreciably milder than the surrounding areas. The inside corner of a building or the adjoining walls of a patio may actually constitute a kind of sun trap that builds up needed heat on cool winter days and offers protection from chilling winds as well. In my own garden a tender palm in such a corner is protected from too much heat in the summer by a large deciduous tree which drops its leaves in the winter to let in a concentration of warm sunshine when it is most needed.

In selecting a site it should also be borne in mind that cold air flows down hills and slopes—much like the drainage of water—accumulating in shallow pockets and valleys to make these low points the coldest spots in the garden, places to avoid when planting the marginal palm. The displaced warm air, on the other hand, tends to rise, making the higher areas appreciably warmer than the lower points. Consequently, when a choice is available the higher site with good air drainage is vastly to be preferred. (In California citrus growing areas the difference in temperature between the hillside and the valley is often as much as ten degrees.) In the small garden, how-

ever, the crucial factor in the case of a young palm that has not yet developed a stem to raise it off the ground may be nothing more than leaving a heavy garden gate open to aid in the drainage of cold air out of the garden and into a lower area. This seemingly minor consideration can be of great importance in the case of such small palms as the *Phoenix Roebelenii* or the *Chamaedorea elegans*.

A variation on this same principle, but involving the rising of warm air rather than the downward drift of cool air provides an additional point to be considered when selecting a planting site. Since the warm air that has accumulated around the palm during the day will rise and dissipate into the clear sky at night, anything that will prevent this warm air from escaping will accordingly increase the possibility of success with the marginal palm. In the case of larger palms overhead protection can often be achieved by making the planting under a group of wide-spreading hardy palms such as *Phoenix canariensis*, or under tall, spreading broad-leafed trees. A high canopied live oak provides this same natural protection in my own garden for two *Archontophoenix Cunninghamiana*. Covering for smaller palms is even easier to find. High shrubbery sometimes will offer adequate protection, while the widely overhanging eaves of some of the modern one-story houses provide an ideal site for many small palms. Heat that accumulates during the day does not deflect to the sky at night but is trapped under the extended roof to raise the nighttime temperature of the air surrounding the palm. The Rhapis palm can be especially successful as well as architecturally effective when grown this way.

A further point to consider when planting a palm so that it will have every chance of surviving cold weather is the matter of soil drainage. Where winter rains are heavy this may be a critical factor. Wet soil remains cold whereas well-drained soil will warm in the sun. Several of my Howeas, planted at lawn level, did not survive the heavy rains of last winter. On the other hand, those grown in a bed that was raised eighteen inches above the surrounding area, where there was good drainage and where the sun could get through to warm the soil, have weathered several winters. A planting raised by a small brick or stone retaining wall is often all that is needed to ensure adequate drainage, and of course has the additional virtue of bringing small palms up nearer to eye level.

In spite of every precaution in planting, however, there occasionally does come that very cold night, when more than a favorable site is needed to carry the palm through until spring. Unless the drop in temperature be very great, a covering over small palms is often all that is necessary. The whole plant need not be enveloped but a mere covering of burlap or paper stretched over the top may provide sufficient protection. This is often enough to prevent the radiation of warmth from the plant, which is a key factor in the phenomenon of frost. Whatever protection is used, however, it should not be allowed to come into direct contact with the palm leaves. Instead of allowing the material to rest on the plant itself, it is better to drive several stakes into the ground around the palm to act as a framework for the protective covering. In fact, burlap covering can be securely attached to two of the stakes so it can be drawn over the plant as a cover on cold nights and then thrown back during the day. On very cold nights a lightbulb left burning beneath the covering will often provide enough heat to carry the small palm through. When larger palms are planted under a large, spreading natural cover as mentioned above, the use of an orchard-type heater is practical. Out in the open a heater has little effect on a palm tree, but under the canopy of oth-

er spreading trees, the heat is retained and real protection results.

As a further precaution against winter damage to tender palms, one can actually begin to prepare the plants for cold weather some time before harmfully low temperatures are really expected. Several months before the first frost the rate of growth can be slowed down in the palm by withholding nitrogenous fertilizers that would stimulate a flush of tender new growth, which is always more susceptible to frost than older leaves. Instead of encouraging new growth every effort should be made to harden the plant and retard growth. This can be accomplished by diminishing the frequency of irrigations and by applying a fertilizer low in nitrogen but rich in phosphates and potash in order to stiffen the stalks and promote sturdy stems, and in sum the general health of the palm. In my own garden a liquid fertilizer with a rating of 0-10-10 (proportions of nitrogen, phosphates, and potash) has proved to be a satisfactory agent in slowing down growth and preparing my palms for the winter. Then in the spring as soon as the danger of any frost is passed, I supply a fertilizer that is rich in nitrogen so that lush and rapid growth can be made during the warm months of spring, summer, and early fall. Here again I use a liquid fertilizer, but this time one rich in nitrogen usually of the 17-7-0 formula.

Sometimes, however, in spite of our every precaution the cold and frost sneak in and our tender palms fall the victims of their marginal climates. But even in this case whether the palms are irrevocably lost or not may depend upon what the gardener does or does not do after the freeze. First, the sun should not be allowed to strike the plant while frost crystals remain on the leaves. Sometimes hosing off the leaves with water to dissolve the frost or ice crystals will save the leaves from burn. This avoids the transference of heat and moisture from the leaves that often accompanies the actual melting of the frost on the leaf. If, however, the cold was apparently more than the tree could bear and the foliage is destroyed and the palm gives every indication of being lost, one should not be in haste to take it down. The tree should be allowed to remain for at least one summer. There are many cases on record where an apparently dead palm later sent out a new leaf sheath from the spark of life that remained in the core of the tree. There are sadder cases where frozen palms have been taken down and chopped up only to reveal splinters of living green growth pushing upward, ready to emerge from the crown.

Pampering palms that are marginal to a climate is a challenge. One should be prepared to lose them and should never predicate the design of a whole garden on them. But in spite of the risks and work involved the pleasure and pride of success far outweigh the risk and effort one puts forth to outwit nature.

The death in late February this year of Mr. Charles E. Ingalls of Hallandale, Florida, came as a surprise and shock to his host of friends. For many years a grower and wholesaler of palms, he was an avowed champion of two organizations he thought were "terrific" – the F. N. G. A. and The Palm Society. His life and remarkable character deserve extended comment, but the notice of his death came too late for inclusion in this issue of a fitting obituary.

Photo by Dent Smith

Sugar palms (Arenga pinnata) *growing in the limerock soil at the Fairchild Tropical Garden. The species is often cultivated under the synonymous name* Arenga saccharifera. *When grown under optimum conditions, the usually solitary trunks reach a height of about* 40 *feet and the leaves a length of* 30 *feet or more. Native in Malaya and cultivated in India for the sugar obtained from the sap. The size of the mature palms illustrated above has been greatly restricted by the lack of always moist, deep rich soil.*

Photo by Dent Smith

A closer view of the same inflorescence showing in the illustration on the facing page. The sugar palm is monocarpic; that is, it flowers and fruits successively lower from the top toward the bottom, and it dies when the lowermost spadix matures its fruit. Obviously, then, the specimen illustrated is not long for this world. The two-inch fruits are yellowish; and the sweetish pulp, like that of the Caryota fruits, cannot be eaten because of the poisonous calcium oxalate it contains.

Photo by Jack O. Holmes

A glimpse into the foliage of some sugar palms growing in the edge of a drained cypress swamp at the Carl Cowgill Nurseries, Tampa, Fla. The fragmentary view does not reveal the several palms or their immensity, but it hints at their proportions by dwarfing the figures of Father Jerome and Mr. Cowgill.

Photo by Jack O. Holmes

The leaves of the Cowgill sugar palms (Arenga pinnata) *measure from 20 up to 30 feet in length. Those pictured above are not the longest. In foreground: Mrs. Holmes and Father Jerome.*

Some Palms in Central Florida

Recollections of a Polk County Garden

LAWRENCE M. SIMONSON

Having been asked frequently to record some of my recollections and experiences in horticulture over the years, here are some items that I hope will be of interest on palm-growing in Polk County, Florida, where I lived from 1917 to 1944. In the latter year I moved here to Lantana on the Lower East Coast where it is considerably warmer in winter and where one does not have to fear, each successive season, that his collection will be wiped out overnight. Of course there is no really frost-free place on the mainland of the state, but a mature palm can usually stand a little cold weather.

In Polk County, in the central citrus section of Florida, where there is good air drainage (on hills) and to the southeast of many of the numerous lakes, there is much less frost danger on cold nights than in locations such as where my place was — on fairly low ground to the northwest of a large lake. I did not realize this fact until after I was fixed. Eighteen degrees Fahrenheit on three consecutive mornings in 1940 was not conducive to palm growth, but a number of mature palms did come back eventually if the plant was thick enough through to protect the bud. Perhaps many people do not realize that most palms have only one bud or growing point, and if that is injured the whole plant dies no matter how large and vigorous the rest of it may be.

Palms that did well in my collection there were the *Cocos plumosa* (*Arecastrum Romanzoffianum*) which made fine large specimens; several of the Phoenix group, *P. sylvestris* and *P. reclinata* and one or two other undetermined Phoenices. Occasionally an exceptionally cold season would damage them slightly, but they always recovered quickly. On account of the sharp spines on the lower pinnae of the Phoenix palms, which have a fashion of springing at you when an old leaf is lopped off, they are not too desirable for small grounds though they do make beautiful specimens where there is room.

Phoenix canariensis never did very well for me. I never decided whether it was the light sandy soil or an individually weak plant. They take up so much room that I had but one plant; it apparently grew all right but never made the massive specimen that one sees on heavier soils. There were much better specimens on other places in the neighborhood.

I had a fine specimen of *Livistona chinensis*, though it is not a fast grower, and it never showed any cold injury. It made a trunk of about 12 inches diameter and was at least 10 feet high when I sold the place. Possibly my experience with this particular palm may be of interest.

My land when I located there was covered with a mixed native growth — mostly scrub oak, longleaf pine and saw palmetto — average dry, well-drained citrus soil, and as such, as I learned later, is subject to toadstool root fungus (*Clytocybe tabescens*). At that time — about 1930 — the disease had not been much studied and not much attention was being paid to what caused the death of any tree. It was considered just one of those things that happen. At that time I was receiving numbers of new plants from the U.S.D.A., Bureau of Plant Introduction, for experiment as to their cultivation under Florida conditions. When received, they were pot-

Photo by George F. Weber

Clitocybe tabescens *fruiting at base of Brazilian Butia palm attacked by root rot. Illustration taken from U.S.D.A. Circular No. 853, Dec. 1950, "Clitocybe Root Rot of Woody Plants in the Southeastern United States," by Arthur S. Rhoads.*

ted up and cared for until large enough to be set out in permanent locations, where of course they had to be watered frequently until established in that rather dry soil. It seems that this treatment is just what is required for developing the root fungus where it had not shown up previously, or where, when it attacks a scrub oak, its loss is not noticed and the dead tree only makes room for another sprout to grow.

Many of the hardwood plants that I planted out developed the toadstool disease sooner or later and would often die before the disease was suspected. Ordinarily the fungus grows in the cambium layer of an exogenous plant as a pure white layer, but I found it can also attack an endogen, as I have found the deadly white mycelium in anthuriums and bananas on high ground as well as on the *Livistona chinensis*—mentioned above—hence this digression in an article on palms. The palm was perhaps four or five feet high when I discovered the telltale mass of tan toadstools at the base. By carefully digging away the soil around the base of the trunk and chiseling out all affected wood that showed any signs of white threads of mycelium and leaving exposed to air and dryness, the plant showed no further rot and thrived as long as I lived there. There was no recurrence although I had removed fully one-third of the trunk and the cavity never filled. In fact, that was the only satisfactory treatment I ever found against the disease in any plant when it could be detected in time. Perhaps some of the new fungicides would be good, but usually the disease is too far advanced in a woody plant and the cambium is completely girdled at

ground level before the top shows that circulation is cut off. I used to try to remove all scrub-oak roots, which harbor the disease in wild land, before planting any new trees, but it is an impossibility to remove all. Perhaps with the modern bulldozers one could do better, but then the valuable top soil is sacrificed.

I still have plenty of toadstool root fungus here in Lantana on land similar to that I had at Lake Alfred, and I understand it is very widely distributed through the Southern states; but it does not show up until the soil is irrigated and then is only evident on an occasional plant that is being watched and maybe not for four or five years when all of a sudden our plant dies for no apparent cause. An examination of the cambium at ground level will show the telltale white mycelium under the bark completely encircling the trunk. It is rather disheartening to say the least, and I have yet to find an answer except to move away as used to be the remedy recommended for nut grass.

Returning to the subject of palms in Polk County, I had two or three good specimens of Butia species that did very well, with large bunches of colorful, edible fruit. Somehow Butias do not particularly appeal to me though they do belong in an article on palms.

Two very satisfactory palms were of *Paurotis Wrightii*, which from two small plants I bought at the old Royal Palm Nurseries in 4-inch pots about 1927, developed into fine clumps 8 or 10 feet high during the 17 years I lived there. I did not expect them to do much when first planted, as at that time Paurotis was considered to be very tender; but I do not remember that they ever especially suffered from the cold while I was there.

Elaeis guineensis and *Elaeis melanococca* did pretty well but were blackened back to the bud in occasional extra-cold years.

Two specimens of the red variety of *Livistona Mariae* did very well and made fine plants, attracting much attention because of their pronounced maroon color. It is a variety that would be much in demand if propagating material could be obtained, for I know of no other palm with this characteristic. The specimens made medium-sized palms with long petioles. When young the plants were entirely red, but with age they showed some green. They were growing in full sunlight.

I had a number of species of Thrinax and Coccothrinax, but most of them were killed in the freeze of 1940; also a nice graceful specimen of *Archontophoenix Alexandrae* at the same time.

I had a number of Chamaedoreas, Ptychospermas and Caryotas, but they were small and in pots so that they could be protected. Later they were brought here to Lantana where they have been free from frost danger and many have made fine plants.

With regard to other palms growing in the neighborhood but not on my property, I recall two fine specimens of *Archontophoenix Cunninghamiana* (*Seaforthia elegans*) at a friend's in Winter Haven, bearing fruit and from which I obtained two of the plants I now have here in Lantana.

Polk County is too cold for coconut palms, but I remember one nice fruiting tree in a sheltered location in the eastern part of Winter Haven, well protected by the numerous lakes. It did not survive long though it did produce some fruit and for a number of years gave a very tropical effect.

I remember a number of other palms in the vicinity: Washingtonias, Royals, Acrocomias and Chrysalidocarpus, but I cannot recall any special individuals except a fine specimen of what I am now practically sure was *Corypha elata* growing on a large estate on the hillside southeast of Crooked Lake (Lake Caloosa). There may be a subdivision there now. At that time, 1931, I was not as familiar with the different species of palms as I am now, but I shall never forget the mammoth, rather

glaucous fan-leaves of this plant which was probably 12 to 15 feet high and at least 25 or 30 feet across. I have never looked for this species in the palm collections here on the Lower East Coast, but that was an especially fine specimen for so far north.

In looking over some of the old catalogues of the Royal Palm Nurseries of Oneco, near Bradenton, one is impressed by the number of trees and palms offered for sale about forty years ago. Later they seem to have been dropped and are being re-introduced as something new. In these lists I find Corypha, Deckenia, Dypsis, Roscheria, Nephrosperma and others, besides many that one is more or less familiar with, such as Arenga and Caryota. Of course that nursery did an international business at that time and plants were shipped all over the globe. I wonder if any that were sold in Florida still survive or if they have all succumbed to cold or to real estate improvements. Forty years is time enough to develop some fine specimens.

The Fan Palm Caterpillar as a Household Pest

ROY J. PENCE

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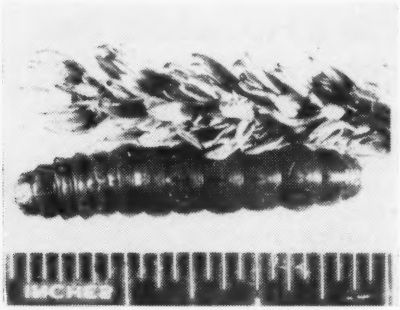
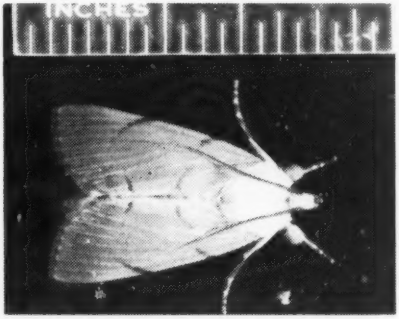
During the summer and early fall, the pest control operator is likely to receive a call from some alarmed housewife who complains of large, pink "cutworm-like" caterpillars that are tearing up expensive fabrics in her home. She may list some of the materials being destroyed as clothing hanging in closets, upholstered furniture, drapes, or perhaps the pile of an expensive rug. If she is observant, she may also note that the caterpillars are shredding her fabrics to obtain material with which to fashion their cocoons. In all probability the P.C.O. will be hearing an accurate report of a condition that actually exists, and realize he is faced with the problem of controlling the fan palm caterpillar.

The fan palm caterpillar, *Litoprosus coachellae* Hill (Fig. 1), reaches a length of 1½ inches, is usually pink in color and smooth bodied. The adult is about 1 inch long, of a light buff color, and with a pair of narrow dark indented lines arising from the leading edge of the front wings. It is associated with plantings of the fan palm, *Washingtonia filifera* Wendl., and *W. robusta* Wendl. The caterpillars feed on the blossoms of these palms and pupate in the fibrous growth found matted at the base of the fronds. In the event there is an absence of natural enemies of the caterpillar, or if the tree has been recently "skinned" so as to remove most of the fibers naturally utilized for pupation, the caterpillar will be crowded out and crawl to the ground in quest of a new location and materials that will serve as a substitute for the construction of its cocoons. It is during these periods that the "grounded" hordes of caterpillars are apt to enter a dwelling and cause considerable damage to whatever fabrics they encounter during their search.

The incidence of the fan palm caterpillar is becoming more and more frequent, and is causing considerable concern, not only because it is a nuisance but because of the material damage it causes. On one occasion an apartment house in the downtown area of Los Angeles was so severely infested with this pest that the tenants threatened to move out unless some relief could be found. Similar reports have been received from other locations where the Washington palm is used as an ornamental tree.

The use of the Washingtonia palm as an ornamental tree in landscaping has become so widespread that it is now being planted wherever it will thrive. It is found as far north as the Oregon border, in the coastal and lower valley areas, and is at present being planted in Las Vegas, Nevada. R. A. Flock of the University of California Citrus Experiment Station in Riverside, and Lloyd Martin of the Los Angeles County Museum, both report the distribution of the caterpillar as far east as Phoenix, Arizona.





The fan palm caterpillar, Litoprosopus coachellae *Hill, showing larva with sprig of palm blossom and an adult.*

The control of the fan palm caterpillar at the seat of infestation has become a problem, primarily due to the extreme height of some of the trees. Attempting to spray a tree reaching a height of 40 or 50 feet is a difficult task and the "fall-out" from the spray material can wet down, stain and cause considerable damage to property and concern to property owners some distance to windward. Banding the trees may prevent many caterpillars from crawling down the trunk, but has no effect on those that become dislodged and fall during the slightest breeze. Also the tree bands prevent their return up the trunk to their place of origin.

It is felt that the best method of controlling the caterpillars is to send aloft a "palm-skinner" with a knapsack sprayer to prune out the infested blossoms, and at the same time treat the areas in the vicinity of the infestation. He should use an emulsifiable concentrate of insecticide rather than a wettable form, in order to eliminate the need of having to shake the tank to keep the solution agitated. Based on some experimental work on the fan palm caterpillar at the Department of Entomology at UCLA, Drs. Walter Ebeling and Leland R. Brown found lindane at 1 lb. of actual per 100 gals. to be effective, but DDT at 1 lb. of actual per 100 gals. was the most promising of the insecticides used, from a practical standpoint.

Inasmuch as nothing is known to date concerning the minimum temperature tolerance of the caterpillar, it will be interesting to learn how far north and east it can be found within the areas where the palm is known to exist. Any reports of the caterpillar's occurrence within areas of normally cold winter temperatures will be welcomed by this Department.

Literature cited: *Flock, R. A.* 1951. Damage to household goods by the fan palm caterpillar. *Jour. Econ. Ent.* 44 (2): 260-261.

Comments on Chamaedorea Palms

DAVID BARRY, Jr.

The American genus of Chamaedorea offers palms that are both beautiful and useful. Their beauty rests upon a variety of form and structure that is characteristically delicate and diminutive. Their usefulness is derived from a combination of resistance to cold, tolerance to shade and a utilitarian size.

Numerous species of Chamaedorea palms will withstand several degrees below 32° F. while palms of other species native to the same forests will suffer and die at temperatures several degrees above freezing. Such endurance on the part of Chamaedorea is of especial value to growers in semi-tropical areas. Hardiness does not apply to all species of Chamaedorea but it is a characteristic that is common to many species. It is typical of the plants that are found in cultivation in Southern France, Italy, Florida, and the coastal belt of Southern California. Most of these plants are native to Mexico and Central America.

One theory advanced to explain the hardiness of Chamaedorea is that eons ago they were highland plants accustomed to cold, were washed down to live in the lowlands, and retained their hardiness in spite of the change in elevation.

A clump of *Chamaedorea Arenbergiana* in Riverside, California, an interior city, affords an example of hardiness. It has withstood 18° F. by being provided with a covering of cloth. After allowance is made for the extent to which the protection modifies the cold, 18° F. remains a very low temperature for a palm from the tropics to endure.

Chamaedorea palms live on the floor of the forest and therefore are shade-loving plants that adapt themselves to the light deficiency usually found in interior rooms and in porches and patios. In such places the plants grow to natural proportions and do not become leggy.

Clump-type Chamaedorea are the "hotel-lobby" plants in several of the large hotels in Italian cities. In spite of light deficiency the plants are in thrifty condition and give the appearance of having been in their respective locations for years.

Chamaedorea palms make fine house plants. They do not readily become so large that they have to be removed. Because many species come from regions where there is scant rainfall at certain seasons, they are drought-resistant, and, as a consequence, resistant to neglect. In general, these palms are in pleasing architectural scale in the average home.

The reed-like, graceful silhouette of bamboo is attractive to the eye and is presently very popular decoratively. Bamboo, however, grows poorly in the shade and also sheds its leaves freely. In contrast, the clump-type Chamaedorea, or the single-stemmed types that are assembled in clumps, afford the appearance of bamboo under interior conditions without its cultural weaknesses.

Chamaedorea comprises a group of palms of many sizes and shapes. Leaves vary from single, unbroken planes, the size of a hand, to long fronds of many leaflets. Leaflets vary in width, shape and color. In some species they are narrow and bright green; in others narrow and glaucous; in some dark green and broad; in some S-shaped, or sigmoid.

Chamaedorea palms vary considerably in size. At one extreme is *Chamaedorea humilis*, from Chiapas, that will flower when in a four inch pot and at a height of one foot. It presents in miniature the symmetry of a great tree palm. From this dwarf and other species much like it, the sizes range to heights of fifteen feet in such species as *Ch. Tepejilote* and *Pacaya*. Within these extremes of size the palms fall into two general classi-

fications,—single trunks or multiple trunks.

Floral structures are of many shapes. Some of the spadices, the floral branches that carry flowers and fruit, extend through and above the canopy of leaves, whereas other spadices grow out of the naked trunk below the crown of leaves. Flowers and spadices vary to a remarkable extent among species, and in some plants between sexes of the same species. This immense variation in structural detail is a headache to the taxonomist, but does afford much charm and interest to the grower-collector of these plants.

Chamaedorea palms are not as abundant in cultivation as they should be because of difficulty in obtaining seed. An exception is the palm that is grown at the present time in the United States under the name *Neanthe bella*. Many hundreds of pounds of seed are imported each year from Mexico. This species is more extensively grown in the United States than any other palm. It is a standard house plant and is generally available in chain stores. This palm may be eventually established as *Chamaedorea elegans*, or as *Collinia elegans*. In spite of its generic name, *Neanthe* is as much a Chamaedorea as any other palm of the genus.

Seed collecting in the wild is not ordinarily easy because seed is found only on the female plants, and its thin skin offers little protection against drying out and riddling by insects. The seed is small, averaging less than one-quarter of an inch in diameter, and is quickly dispersed on the forest floor.

Before planting, seed should be kept in plastic bags or in slightly damp, moisture-retaining material. Plant the seed in similar material below the surface a distance equal to the width of the seed. By the way, this is a standard rule for planting all kinds of palm seed. Keep the containers in a warm place and expect germination within a month to a year.

A dependable source of seed is from a stock of, say, six or more plants of the same species. Most of the species do not set seed when away from their native haunts because insects are not present to transport the pollen from the male plants to the female plants. A few species of which *Chamaedorea Tepejilote* is an example, will set their own seed because the male plants produce such an abundance of pollen that it makes its own air-borne way to the flowers of nearby female plants. In most cases, however, it is necessary to hand-pollinate in order to set seed. The sex of the male plants can be readily determined by observation of pollen within their flowers. The flowering season lasts for several weeks, during which time groups of female flowers on the inflorescenses attain receptivity. The female flowers remain open and receptive for only two or three days. Evidence of receptivity is the opening of the corolla to expose a pistillode that is glistening with nectar to which pollen readily adheres. It is helpful to have several male plants with flowers maturing over two or three weeks in order to have fresh pollen at hand. If enough male plants are not available to afford fresh pollen when needed, keep pollen fresh by placing it in plastic bags in a refrigerator.

Pollen is of two kinds, that which is abundantly produced and falls readily from the flowers and that which is sticky and can not be shaken from the flowers. The best way to collect pollen of the first kind is to hold a sheet of transparent plastic under the inflorescence and to tap the branchlets to which the flowers are attached. The pollen will collect on the plastic as a white dust where it is readily discernible and easy to pick up with a fine brush, with which it can then be applied gently to the female flowers. With the second kind of pollen a different method is recommended. Male flowers should be removed from the spadix and the three sections of the corolla (like thickened

sepals) should be detached from each flower. Pointed forceps are useful for this task. A quantity of stripped male flowers should be placed in a small receptacle and air-dried for two to four hours. The sticky pollen will thus become dry enough to adhere to the bristles of a fine brush, which should be used to stir the flowers in the receptacle. Then the pollen can be applied to the female flowers as above.

The flowers will swell a few days after pollinization. The branches of the inflorescence will gradually become orange-red, and this bright color, in contrast to the shiny black of the seeds, makes an ornamental addition to the appearance of the palm. The period from pollinization to ripeness of the seed takes about a year. To hand-pollinate successfully these palms is easy, pleasant, and a rewarding experience.

The opportunity to hybridize is of course at hand. In deference to the taxonomic difficulties presented by the genus and to give botanists a better opportunity to bring order out of chaos that exists between species, before exposing them to the confusion between hybrids and species, no urging to hybridize is forthcoming here.

Collectors can exchange plants with one another with as much ease as do orchid or bromeliad growers. Groups of each species should be exchanged in order to offer plants of both sexes. Except in their larger sizes Chamaedorea palms are easy to ship by air in light cartons.

Because of the ease of growing palms from seed the United States Department of Agriculture makes a general prohibition against the importation of palm plants.

With more air routes and construction of new roads in the tropical Americas, obtaining Chamaedorea seed from known and yet-to-be-discovered species will be easier and within the reach of more people. The pleasure of growing Chamaedorea palms is destined to become a common experience.

MORTAL ENEMIES – Israel and Egypt, besides being neighbors, have at least one thing in common: both have issued postage stamps adorned with palms.

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Hyospathe	8	2	4	195-199	1949
Hyphaene (thebaica, photo)	7	2	2	163	1946
Iriartea (Panama)	2	2	2		1933
Jessenia (Trinidad)	7	4	5	435-437	1947
Latania (Mascarenes)	6	2	2	58-67	1942
Livistona (Micronesia)	8	6	20	432-438	1956
Lodoicea (Seychelles)	6	1	1	9-29	1942
Malortiea	6	4	5	258-261	1943
Malortiea	8	2	4	189	1949
Manicaria (Panama)	3	2	2	47-52	1933
Manicaria (Trinidad)	7	4	5	409-413	1947
Mascarena	6	2	2	71-82	1942
Mascarenes, Palms of	6	2	2	49-104	1942
Mauritia (Trinidad)	7	4	5	357-360	1947
Maximiliana (Trinidad)	7	4	5	437-441	1947
Metroxylon	8	6	20	438-444	1956
Micronesia, Palms of	8	6	20	421-478	1956
Morenia	8	2	4	203-205	1949
Neonicholsonia	8	3	7	239-243	1951
Nephrosperma (Seychelles)	6	1	1	42-46	1942
Normanbya	2	4	9	187-188	1930
Normanbya	3	8	9	435-437	1935
Normanbya	4	6	12	209-211	1939
Nypa (Micronesia)	8	6	20	475-477	1956
Oenocarpus (Panama)	3	2	2	70-73	1933
Palms, Characteristics	3	1	1	2-29	1933
Panama, Palms of	3	2	2	32-116	1933
Panama, Palms of	6	4	5	198-264	1943
Paurotis	4	10	33	361-365	1940
Paurotis	8	3	5	210-215	1951
Pinanga (Micronesia)	8	6	20	450-453	1956
Prestoea	4	10	36	382-385	1940
Prestoea (Panama)	6	4	5	201-204	1943
Prestoea (Trinidad)	7	4	5	434-435	1947
Pseudophoenix	4	7	22	276-284	1939
Ptychosperma	3	8	9	413-417	1935
Ptychosperma	4	6	12	215-217	1939
Ptychosperma (Micronesia)	8	6	20	466-471	1956
Ptychospermate palms	3	8	9	410-437	1935
Ptychospermate palms, supplement	4	6	12	209-217	1939
Raphia (Panama)	3	2	2	40-47	1933
Reinhardtia	6	4	5	258-260	1943
Reinhardtia	8	2	4	189-191	1949
Rhapis	4	6	11	199-208	1939
Rhopalostylis	3	8	9	429-435	1935
Rhyticocos	4	10	34	366-372	1940
Roscheria (Seychelles)	6	1	1	40-42	1942
Roystonea (princeps)	2	4	9	187	1930
Roystonea (Preliminary survey)	3	7	7	341-387	1935
Roystonea (hispaniolana)	4	7	20	266-270	1939
Roystonea (new enumeration)	8	2	4	114-134	1949
Roystonea (Trinidad)	7	4	5	430-432	1947
Sabal (American palmettos)	3	6	6	274-337	1934
Sabal (problem)	4	10	37	388	1940
Sabal (Umbraculifera)	4	7	21	271-275	1939
Sabal (princeps-Beccariana)	4	10	37	386-387	1940
Sabal (Panama)	6	4	5	200-201	1943
Sabal (Revision)	6	7	11	365-459	1944
Sabal (glaucescens, Trinidad)	7	4	5	361-362	1947
Scheelea (Panama)	3	2	2	35-40	1933
Scheelea (Trinidad)	7	4	5	441-445	1947
Serenoa (repens)	6	7	11	379-381	1944
Serenoa (repens)	8	3	5	215	1951
Seychelles, Palms of	6	1	1	1-48	1942
Siphokentia	8	4	13	309-315	1953
Socratea (Panama)	3	2	2	64-70	1933
Species, names of palms	7	2	2	168-178	1949
Stevensonia	2	4	9	192-195	1930
Stevensonia	2	7	13	438-441	1932
Stevensonia (Panama)	3	2	2	115-116	1933
Stevensonia (Seychelles)	6	1	1	34-40	1942
Synechanthus (Panama)	3	2	2	83-86	1933
Synechanthus	8	2	4	199-203	1949
Terms employed in palm literature	6	4	5	264	1943
Terms employed in palm literature	7	2	2	178-180	1946
Thrinax	4	4	6	127-149	1938
Thrinax (Lesser Antilles)	8	2	4	94-99	1949
Trachycarpus (Fortunei)	2	4	9	188-191	1930
Trinidad and Tobago, Palms of	7	4	5	351-445	1947
Verschaffeltia (Seychelles)	6	1	1	46-48	1942
Washingtonia	4	2	3	51-82	1936
Washingtonia (Panama)	3	2	2	113-114	1933
Woodsonia	6	4	5	262-264	1943
Woodsonia	8	3	7	239-243	1951
Yuyba (Trinidad)	7	4	5	413-417	1947
Yuyba	8	2	4	173-177	1949
Zombia	4	7	16	238-246	1939

Adolph C. Jordahn — Pioneer Plantsman

Adolph C. Jordahn was born in Kolding, Denmark, on Christmas Day, 1882.

When he was fourteen years old he began learning the nursery trade, and he has been in plant work ever since.

At eighteen he came to the United States, going first to Minnesota, then to St. Louis, Missouri, where he had charge of the grounds of the Annheuser-Busch estate, remaining there until 1918. In St. Louis he met and married Mary Nahmensen, a Missourian of Danish descent.

Mr. Jordahn often visited the Missouri Botanical Garden. There he met Mr. George H. Pring, who recently celebrated his fiftieth anniversary as a member of the staff of that institution. Mr. Pring is an internationally known orchid and water-lily expert, having created some of the finest present-day hybrid tropical water-lilies. Influenced by his friend, Adolph Jordahn began growing orchids as a hobby, continuing with it to this day.

After leaving the Annheuser-Busch estate, Mr. Jordahn came to Florida, taking charge of the C. W. Bingham (later Blossom) estate in Palm Beach, which is noted for its beautiful specimen trees and large collection of rare plants. To the already gorgeous coconuts and royal palms on the grounds, Mr. Jordahn added as many rare palms as were to be found at that time.

In 1933 he was chosen by the late Col. Robert H. Montgomery to help him in the development of his new home, the Coconut Grove Palmetum, now famous for its superb collection of palms. Together, Col. Montgomery and Mr. Jordahn combed the tropical areas of the world for seeds and plants of palms, many of which had never before been grown in the United States. This collection now is over twenty years old; many of the palms have reached maturity, under Mr. Jordahn's and Mr. Ray Vernon's care, and offer the lover of palms an opportunity to see full-grown specimens which one might have to travel thousands of miles to see in their native habitats.

When Col. Montgomery had the inspiration of establishing the Fairchild Tropical Garden – a tropical botanical garden open to the public without charge – he donated many fine palm specimens which were transplanted and cared for under Mr. Jordahn's supervision; most of these have thrived and are now subjects of study by botanist, taxonomist and amateur alike. Besides these, many new introductions were made from sources around the world, most of which were acquired through the efforts of Col. Montgomery and Dr. David Fairchild, in whose honor the Garden was named, and successfully grown through the combined efforts of the staffs of the Palmetum and the Fairchild Tropical Garden.

Now retired, Mr. Jordahn looks back with pleasure on years of varied experiences with his two favorite plants: orchids and palms.

– Lucita H. Wait

Notes on Palm Cultivation in Florida

ADOLPH C. JORDAHN

Palms being such a distinct and conspicuous part of the scenery in our state it is natural that they are being so popularly used for landscape effects around our dwellings as well as in parks and where there is room for them in street planting.

While they usually are of fairly easy culture and even found thriving under adverse conditions they respond very much to good care and thus readily repay in more luxuriant growth and tropical effect when properly treated. Even our lowly saw palmetto which makes our piney woods so monotonous will, if given a chance, develop into a creditable plant.

By far most palms are started from seeds. While some clump palms are capable of being divided it is hardly practical to do so. One exception is the Lady palm *Rhapis flabelliformis*; this palm divides very well and soon makes good specimens, and as seeds of it are difficult to obtain it is often increased by division. Seeds may in many instances be obtained locally where now many more species have reached the fruiting stage than was the case not so very many years ago. Others of course have to be and are being imported from the various countries where they grow and anyone wishing to grow an extensive collection of palms will be obliged to do so. Care must be taken to get fresh seeds as so many lose their vitality very quickly. All seeds should be cleaned of pulpy matter before planting and it may be in order here to state that this pulpy matter of some Arengas and Caryotas possesses burning and stinging characteristics, which some of us have found out by rather painful experience. They should be cleaned with a stiff wire brush. Either clay pots or seed flats are suitable receptacles for seeding, the size and depth of same depending on the number and size of the seeds to be planted. Use a soil preferably rich in humus and enough sand to make a light mixture in order to secure good drainage. Small seeds may be covered about four times their thickness, larger ones about an inch. Coconuts may be planted in the open and barely buried. After seeding the containers should be moved to a suitable place and kept damp but not soggy. A greenhouse is the ideal place as conditions there are more easily controlled, and a slat house is also quite serviceable.

Germination of a seed takes place in some instances rather quickly, four to six weeks in some sorts, in others much more slowly. Some seeds germinate almost spontaneously, others very irregularly; in the latter case it is well to pot those that have germinated. It is generally practiced to pot the seedlings as soon as they can be handled and repot them when needed, using pots as small as will accommodate the plants. Seeds of such species as the various Hyphaene or Borassus require different treatment. Their hypocotyl extends down quite a distance and they will require a box of about 6″ square and 30″ deep to accommodate them. In these they may be grown until ready for planting in permanent positions. It is also quite feasible to plant these seeds permanently in their respective situations but they will there require the same treatment as a plant would in regard to watering.

When considering that palms when once planted will be growing in the same situation for years and according to their nature many will reach a very large size, it would seem most important to make the proper preparations. Our Dade County lands are largely a soft coral rock, most other land here being very poor sand—so there is very little soil here that will produce good plants

and suitable material must be added. In the rock large holes must be dug or blasted, the rock removed and replaced with good soil. In sandy areas it is not so difficult to dig the holes but suitable material must be added. These holes should be 6 feet in diameter and 3 feet deep for large-growing palms and one cannot stress the importance of the fact that it pays to spend liberally in the right preparation as the results will show for years to come. Plants from the propagation house should not be planted out until they are of sufficient size. They are easier to take care of in the house and if planted out too small they are easily choked out by weeds or damaged by mowers and other tools. Plants in 6" pots may well do, but larger sizes are preferable. Smaller plants require water more often and even though we get plenty of rain at times there are also long periods of drought when frequent watering is needed.

Many of our palms may be moved successfully in large cities. This of course is done where immediate effects are desired and with today's machinery presents no difficult problem. It should be accomplished preferably during the warm, damp, growing season. The plants should be dug with a large ball of soil and planted as soon as possible, then watered very thoroughly so the ground will settle without leaving any air pockets around the ball of roots. Brace the palms well with stout wires fastened to a collar of wire with a piece of rubber hose covering. Wooden braces are often used but not recommended as it is detrimental to drive nails into the palm trunk. Care must be exercised in handling large palms as a sudden drop of one may easily damage the bud and it is certainly advisable to remove enough of the foliage to balance the loss of roots in the digging of them. Most of our commonly seen palms move readily but some of them, owing to a poor root system, do not. Butias, at least in this section, do not seem to take hold, and such palms as Scheelea and our beautiful native Coccothrinax or Silver palm even less so. Watering is necessary for a long time after planting, or at least until the plants have developed a good new root system.

Palms are heavy feeders and do need considerable fertilizer. A good feeding program is to make three applications a year. A 4-7-5 formula is good for spring and summer, then one with somewhat more potash for the fall so as to harden the plants up somewhat for our sometimes rather cool winters. The amount used will naturally depend on the size of the palms. Forty pounds a year for a full-grown plant is not too much.

When kept growing thriftily and in good condition palms on the whole are not troubled much with diseases or many insect pests. Scales and aphis are at times rather plentiful on some species but a thorough spraying with a good oil spray can control them. Some of the newer sprays, such as Malathion in an oil mix, have lately been used with good results.

Some years ago our fine Royals were troubled with a fungus disease which apparently was caused by scale insects chewing the leaf covering and thus giving the fungus a chance. Spraying for the insects early seems to have disposed of that pest so now this disease is not so common. A fungus is rather prevalent on *Cocos plumosa*. This one may be caused or helped by some deficiency in the soil. At any rate an additional supply of manganese applied directly to the bud of the palms as well as spread on the ground around them helped a great deal. One serious pest is the palm beetle which lays its eggs in the palm buds where they hatch and devour the growing part. If the damage is noted in time, which is rather difficult, they can be destroyed with a solution of DDT applied right in the bud. Usually the beetles are not noticed until too late, in which case the plant by all means should be destroyed and the grubs all killed.

Unfortunately these beetles show a decided preference for choice plants and seem to be particularly fond of Latanias and *Phoenix canariensis*.

While it has proven possible to grow with success a very large number of palms in this section of the country, it has also been found that many of the importations have been failures. No doubt some of the ultra-tropical ones do not like our occasional rather cool temperatures; others may not like certain soil conditions, but it has been interesting to try them and several of the newer ones have proven most satisfactory. As more are being tried under various conditions and in different parts of the state, no doubt those interested in importing and trying new species will not only get a lot of good experience but may also enrich our palm flora to some extent.

Palms of the Oregon Coast

ROBERT L. BISHOP

(Oregon, or some part of it, lies in the same latitude with upstate New York, Vermont and southern Maine.)

My accidental discovery of a twenty-foot fan palm growing at the entrance of a suburban Portland apartment building was what sparked my interest in the subject of palms. I reasoned that if one palm had withstood the rigors of our northerly climate surely others might be found, especially along the milder coastal sections of our state. "There are palm trees growing in Oregon," was a remark I subsequently made to many of my acquaintances and was usually greeted in return with a skeptical raise of the eyebrows. I could hardly blame them for their attitude, for most Oregonians have been thoroughly indoctrinated by the California Chamber of Commerce into believing that they reside just two shades from the North Pole.

All in all Portland is an unlikely place for palms. In two years I have only been able to locate one other palm. This was a small two-foot specimen which succumbed to a very severe freeze a year ago; however, according to the owner it had survived two winters at least, and possibly more. It is still conceivable that there may be others growing in some of the older residential areas of this city of 400,000 population.

Since my initial discovery and interest two years ago I have been able to locate perhaps a dozen or so mature palms along Oregon's mild coastal strip. These and the one in Portland can probably be relegated to one genus surely, that of Trachycarpus. And possibly Chamaerops, with Washingtonia a doubtful third.

I should explain before going further that the State of Oregon enjoys three or even four distinct climates, beginning on the coast with an extremely mild marine climate. Portland and the Willamette Valley in the interior has greater temperature extremes than the immediate coast, and experiences a true combination of the marine of the coast and the continental climate, which prevails east of the Cascade Range.

A fourth might be described as comprising a small mountain ringed valley in southwestern Oregon, in which are situated the towns of Grant's Pass and Medford. Here also is the small historic town of Jacksonville, an early-days gold mining center and the site of the oldest living palm tree in Oregon. This tree was planted in 1871 by the son of Peter Britt, pioneer photographer and

Photo by the Author

Palms on the property of Mrs. Marie L. Smith of Coos Bay, Oregon.

amateur horticulturist. I have not as yet visited this region, but according to Mary Hanley of the Southern Oregon Historical Society there are a number of other palms in this community. This is a locality of very warm summers, with temperatures ranging to 90° F. and better daily and quite dry in comparison with the coast. Winters are somewhat cooler than either the coast or the Willamette Valley in the north.

Winter brings the heaviest rainfall throughout the entire state and may range from 160 inches at the crest of the Coast Range to 10 inches annually on the high deserts of the southeastern corner.

The coastal strip or plain with which I am here concerned is at sea level elevation, quite narrow, being from one to ten miles in width and extends from the California border to the Columbia River 295 miles north. The southern section from Coos Bay south is the mildest part of the whole state, while north of Coos Bay the climate tends to be cooler, though not markedly so. The Coos Bay area mean temperatures range from a January mean of 45° F. to an August mean of 60° F. It is never hot here in summer, and on the whole a remarkably even temperature prevails the year around. The nearly complete absence of snow and killing frosts makes it comparable in this respect with the Gulf Coast. The all-time low temperature recorded at North Bend on Coos Bay was 17° F. The usual low when below freezing is seldom greater than 28° F. and generally not of a prolonged duration.

This last summer (1956) I began a rather hurried search. With only three days to look for palms I headed for the coast. I began at the town of Taft about 100 miles southwest of Portland. I hadn't been on the road long, about five miles, when I spotted a pair of fan palms about five feet tall growing in a grove of Cordylines. My find was a pleasant surprise to me and absolute amazement to my wife who had long regarded the Portland palm as a freak. I could have hardly missed these, for on the highway was a vacated building with the cryptic words "Palm Cafe" emblazoned on its sign board, followed by "'Dine among the Palms." This seemingly had become a hard fact for the natives to swallow judging from the deserted air of the property. Next came a long stretch of road devoid of both people and palms.

At Waldport I was lucky enough to find another small palm owned by a Mrs. Lee Doty who was able to give me more information than anyone I have contacted before or since. This palm while only six feet tall is thirty years old, which may be due to species characteristics or that Waldport may lie in a cooler spot climatically than other coastal points. She stated that in the last ten years it had probably grown a foot in height, while the trunk diameter remained about eight inches. It was started from seed and had been transplanted about ten years ago with great difficulty due to the tremendous root system. The soil here is very sandy, while the whole locale suggests a continual dampness.

Eighty miles south of Waldport lie the twin cities of North Bend and Coos Bay, and here I found the bonanza I had been looking for. Being the largest and one of the oldest population centers on the coast it also has the largest and oldest palms. At Shore Acres State Park directly west of Coos Bay is what I believe at present to be the finest single stand of palms in Oregon. They have never been publicized and consequently are practically unknown even locally, or at least the local population seems blithely unaware of their presence. This park was once a millionaire's estate and consists of extensive gardens situated on a cliff facing the ocean. Incidentally Cordylines abound in this area, as well as in other coastal towns; here they are most numerous outnumbering the true palms twenty to one. Most of the coastal

Photo by the Author

Thirty-year-old palm belonging to Mrs. Lee Doty of Waldport, Oregon.

residents when asked about palms erroneously regard these interesting plants as palms.

All of the palms, both in the park and in the twin cities are fairly tall, towering twenty to thirty feet and more. To my untrained eye they seem to be of the genus Trachycarpus, but rather than commit myself to a likely error I will leave the final determination to the experts. I must confess that at this point I am like a man trying to describe a cow who has never seen a cow before. All are fan palms with great semicircular leaves of a four or five foot spread. The trunks are covered with a dark brown hairlike fiber and the stubs of the fallen leaf stalks. On some, but not all, the trunks taper sharply to the ground; that is, smaller at the ground level than at the top. The fruit is small beanlike but seldom ripens, and the trees usually cast the fruit to the ground while it is still undeveloped and green. This is probably due to the lack of summer heat, since it rarely goes above 75° F. at North Bend.

I think the most regrettable thing about these palms is the lack of knowledge and interest in them, though most of the owners are rather proud of their particular specimens. Aside from this there is little interest in perpetuating or extending the existing plantings with young stock. I would say that nearly all of these palms are from 30 to 60 years old or more, yet never is a young tree seen. Why no others have been planted is something of a mystery. Certainly the climate is no more severe than it was 50 years ago, so perhaps they merely went out of style as the monkey puzzle tree did.

To speculate on the possibilities of other palm genera which might be introduced to this region, is of course endlessly fascinating in scope. Probably some of the native scrub palms of the southeastern states will prove adaptable, such as *Serenoa repens, Rhapidophyllum hystrix, Sabal minor* or even the *Sabal Palmetto.* I noted one clump of an unknown scrub palm which was spreading out in a very vigorous manner at Shore Acres State Park.

The greatest factors against successful introduction are the wet winters, low light-intensities, and cool year-round temperatures. The latitude extending from 42° to 46° North is favorable in comparison with certain gardens in the south of England where palms (*Trachycarpus Fortunei* and *Phoenix canariensis*) have been successfully grown at latitudes of 50° N. and more. The soil of the Oregon coast is generally of an excellent quality, composed mainly of decomposed forest vegetation, and decaying limonitic basalts, decidedly acid with no limestone or alkali present.

We will not, of course, ever enjoy the sight of swaying Coconut palms or other strictly tropicals, but a little hardheaded experimenting should pay off. To those who like their experimenting tough, this is the place.

"When next in Miami," writes Mrs. Theodore C. Buhler, "take advantage of even a spare hour or two to visit one of the area's smaller, older and at present little-known horticultural collections: the Miami City Cemetery, located between North Miami Avenue and N. E. 2nd Avenue at 18th Street. The plantings at this cemetery once attracted many out-of-town horticulturists and are still of much interest. Many unusual palms, trees and shrubs were planted there by the sexton, Alek Korsakoff, in the twenties and early thirties. They are now mature and Alek is always willing to talk about his plants, will help collect seeds if and when available, and has exact records of the plants. One may speak to Alek beforehand by calling, between 8 and 3:30, the City of Miami switchboard, then asking for the City Cemetery."

Palms at a High Latitude in Florida

DENT SMITH

Photographs by the author unless otherwise noted.

The palm collection here discussed is in no way remarkable except for the larger number of genera and species under cultivation far north of the areas generally considered warm enough for their success. In fact it is the northernmost outdoor planting of any comparable number in Florida and—so the probabilities say—in the world. But it is not to be compared with the large gardens, for the grounds are not extensive enough for such a comparison and the palms are still, most of them, of insignificant dimensions. Nor will it ever have the grandeur of the great gardens, for when the palms finally reach impressive proportions there will be no good perspectives for lack of space, no open grass-grown vistas and no landscaping carefully planned for pleasing effect. There will be, instead, a forest or jungle of palms of many kinds incongruously growing together in a way never duplicated in nature.

This planting, which because of its remoteness from the tropics must still be considered in the experimental stage, is at Daytona Beach, Florida on a narrow strip of land locally known as "the Peninsula," itself tightly embraced by the open Atlantic on the east and by the tidal Halifax River on the west. These bodies of salt water not only temper the air of the Peninsula but actually make its winter climate a different one from that of the immediate mainland. In winter the minimum temperatures are often 5 to 10 degrees higher on the Peninsula than at the principal Weather Bureau station located at the mainland airport a scant three miles distant. A maximum difference of 17° F. in minima has been observed by me on instruments installed by Weather Bureau officials for a Cooperative Station at the site of my palm plantings. This site is very favorable for its latitude of 29° 10′ N., which in Florida has always been considered too high for the cultivation of the tenderer palms. Daytona Beach is 260 miles north of Miami and only 90 miles south of Jacksonville; it is in the same approximate latitude as Galveston, Texas and the southern tip of the Mississippi River delta, and in Florida, as Ocala. But latitude is only one among many factors controlling climate; elevation above sea level, prevailing winds and marine influence are some of the principal offsetting factors.

There was once a beginning to the palm collecting here, and it has not been long since. Together with my neighbor Miss Marguerite Martin (who has served as Treasurer of The Palm Society) I acquired seven years ago about four acres of wild land in a section of the Peninsula then sparsely inhabited though since urbanized; and subsequently we each built a house. But at first the land was so overgrown with saw palmettoes, cabbage palms, sand live-oaks, sand pines and tangled vines that it was impenetrable till paths had been cut. At least 200 scrawny trees had to be removed and some 500 saw palmettoes had to be grubbed out by hand, subterranean trunks and all, to make room for other plants; but even then a good half of the land was and still is a half-open woodland mostly of sand live-oaks (*Quercus geminata* Small).

More than half of the palms here have been planted under the oaks. The shade-loving kinds reap the benefits both of shade and cold protection; the sun-lovers thrive in shade when young, but the overhanging branches must be removed as the palm tops approach them. Matted oak leaves and pine

Daytona Beach News-Journal photo

Tall slender specimen is Archontophoenix Alexandrae *acquired fr. Reasoner, Bradenton, planted here 1953. Young royal palm in background fr. Pampas, Cocoa, 1954.*

needles maintain the acidity of the soil composed of deep fine-grained sand with no humus visible in it below the depth of 16 inches. It contains no shell, marl, limerock or other "sweeteners," and the water table is too far below the surface to benefit shallow-rooting palms; but there is a second soil type here and a high water table on about an acre of low land beside the river where the soil is a mixture of poor sand and shell in almost equal amounts. The palms known to have a preference for one or the other of the two kinds of soil are planted accordingly. (Most palms will thrive, or at least live, in a wide range of different soils, but some are "specialists" that fail to adapt themselves outside their restricted element).

The first palms were planted here in 1950, of the kinds already common in this part of Florida. Gradually others were grown from seed or obtained as either large or small plants. The number of species already or soon to be planted now approaches the 200 mark, which is something over 100 short of the 300-goal that might be attained by dint of enough persistence and by good luck.

A few of the planted palms are adults but most are still in the juvenile stage. Tropical palms are tender to cold in direct ratio to their age and height, the older and taller ones suffering less cold injury in proportion to their development of toughened tissues; also in proportion to their height because the foliage is the tenderest part of the palm and the higher it is elevated above the ground, the less it is exposed to frost formation and the colder layers of air nearer the ground level. Despite this demonstrable fact, the small and even minute size of some of the palms here has not yet resulted in the winter-killing of any; moreover, not one palm specimen, big or little, has been lost here to cold damage thus far. Nor are the plants protected by artificial heat or other means.

The month of January, 1956 provided a rather severe test, for it was the coldest January since 1940 when the entire state, minus the Keys, was frozen. The palms here endured in January, 1956 twelve mornings on which the mercury dipped into the 30's and ten other mornings into the 40's; they also endured brief frosts on two mornings when the temperature reached a minimum of 30° F. Nevertheless most were unaffected and none was severely injured; several kinds suffered leaf damage and were made to look quite shabby, notably *Cocos nucifera, Aiphanes caryotaefolia, Adonidia Merrillii, Guilielma Gasipaes.* Others displayed an altogether unexpected tolerance of both frost and the protracted cold, as for example one 7-year-old specimen of *Latania borbonica* which was totally uninjured then or later by actual and visible white frost on its leaves. Oddly enough this palm

Aiphanes caryotaefolia, *fr. Betty Chalk, Miami, pld. 1952. Fast grower, but subject to leaf-burn, fr. cold winter winds.*

Some of the juvenile palms. Upper left: Hexopetion mexicanum, *fr. U.S.P.I. Gdn., Coconut Grove, pld. '52. Lower left*: Arenga pinnata, *Reasoner, '56, showing method of trenching before back-filling with manure to enlarge feeding-watering area 1 yr. after planting. Top right*: Arikuryroba schizophylla, *Reasoner, pld. '53. Middle right*: *Ptychosperma sp. (Dr. Fairchild's "Ragey" palm), FTG distrib. '53, pld. '54. Bottom right*: Dictyosperma album, *fr. Pampas, Cocoa, pld. '54.*

Daytona Beach News-Journal photo

Left foreground, Roystonea regia, *Reasoner, '53. Two palms at either side of drive,* Arecastrum Romanzoffianum, *McDonald, Daytona, '51. In background and barely discernible, l. to r.,* Caryota urens, Cocos nucifera, Archontophoenix Cunninghamiana, Ptychosperma elegans.

and all of the others from the Mascarene Islands that have been tried here seem to be perfectly able to withstand the rigors of this climate, *viz.*, species of Latania, Mascarena and Dictyosperma, so that there is room for some optimism for the two other genera, Acanthophoenix and Hyophorbe. On the other hand, palms from the Seychelles Islands in the same Indian Ocean with the Mascarenes, are definitely tenderer, as plants of the monotypic genera Stevensonia and Lodoicea—accounted for, possibly, by the closer proximity of the Seychelles to the equator.

No one seems to have made the discovery that the palmate or fan-leaved palms are hardier, in the main, than the plumose or feather-leaved palms; or if the discovery has been made not once but a dozen times, there has been no accompanying publicity and no wide recognition of it. It is, however, a truth not easily disputed, even though a very few fan palms (*e.g.*, *Pritchardia pacifica* and *Lodoicea maldivica*) are exceptionally tender and a few feather-leaved palms (species of Acrocomia, Arecastrum, Chamaedorea, Jubaea, Butia, Phoenix, some others) are exceptionally hardy. Such are the exceptions that prove the rule. The evidence in favor of the greater hardiness of the fan palms is overwhelming, for not one of them in a long list should be called exceptionally tender as the term is applied to palmaceous plants. On the contrary, most are remarkably hardy and much more so than generally supposed—or at least the species of Sabal, Washingtonia, Serenoa, Rhapidophyllum, Paurotis, Thrinax, Coccothrinax, Rhapis, Chamaerops, Trachycarpus, Livistona, Borassus, Copernicia, Trithrinax, Latania, Bismarckia, Brahea, Erythea, Cryosophila, Hyphaene, Corypha, still other genera. And though the plumose kinds constitute much the greater number of all palms, no such overpowering number of genera may be adduced among them in support of their general hardiness. Moreover, of several hundred palm species supposed to be extremely tender, one would be hard put to name even ten with palmate leaves. The point of all this is not to show that the plumose palms are tender, for some of them are hardy; it is to show that the palmate-leaved palms are, with very minor exceptions, remarkably hardy to cold no matter their place of origin.

The term "hardy" applied to palms means that, for the plant family, they are relatively hardy but not in the usual sense applied to northern plants. And if a Latania proves hardy here, this does not constitute proof that it would be hardy in Ocala or Jacksonville. It seems improbable that many of the palms growing here—very likely more than half—could be successfully cultivated on the mainland at a distance of only a mile or two from this location, the assumption arising from the fact that the mainland is too often subjected to freezing weather.

Florida has been invaded by "big freezes" usually at long intervals. These invasions are not cyclical and so are unpredictable, but history shows that one of disastrous proportions might occur during any winter. It remains to be seen how many palms at this location will survive the next big freeze to descend upon the state. A prolonged temperature of 25° F. would be indeed calamitous while the palms are small, and one of 27° F. undoubtedly would cause some losses. If the state is spared during the next ten or twelve years, thus allowing time for the palms to reach much hardier size, any losses would be greatly restricted should the threat finally materialize.

Obviously the palms here have not been established long enough to justify the assertion that all or nearly all are suitable for this climate. So far I can only say that the tender kinds have already survived various cold spells of an intensity and frequency hitherto believed certain to be fatal; and if every-

Young coconut palm grown in situ *from coconut sown* in 1951.

one else had held this belief, so had I. Having been undeceived, finally, I can say that something has been learned from the guinea-pigging carried on here; but I cannot say that much of a new and startling nature has been proved in so short a time, and still less that all the palms here have been proved adaptable to the climate. It is already evident that several, though not winter-killed, are not suited to the cool winters. *Pritchardia pacifica* is an outstanding example of unsuitability, for it is invariably an eyesore in January and recovers but slowly. Many other hot-country palms, some of them even equatorial, appear to thrive here quite as well as within their native tropics, but they must remain suspect till many elapsed years remove the last doubts.

I have not relied upon any popular theories of acclimatization. Science has been reluctant to give them credence. The cultivated tomato is still a tropical plant no matter how far north it is grown, and if hardiness could be bred into it by selection the quality of the fruit might be bred out. Improved hardiness of a palm might be brought about by selective breeding through several generations, but if the first generation could not be acclimatized and succumbed, an experiment that might take several lifetimes would end in its beginning. The gradual toughening of the tissues of a growing palm could easily be mistaken for its having become acclimatized. Notwithstanding, it does seem fairly sound that the seed of northern-grown palms will produce offspring at least as hardy as the parent has been proved to be; so that to grow the coconut in latitudes marginal for its cultivation, one should try to procure seed from the northernmost tree known to mature its fruit.

The *Paurotis Wrightii* has been established here on our local peninsula long enough to prove its cold tolerance; clumps of it begin to appear about homes and motor courts. The palms generally grown in the area are those long known to be hardy here, such as species

This young royal palm will not be 5 years old till June '57. Grown here from seed collected '52 from sidewalk, Krome Ave., Homestead.

of Phoenix, Butia, Washingtonia, Rhapis, Arecastrum. Others just as hardy, or hardier, including Chamaerops and Trachycarpus, are scarce or altogether missing. An occasional specimen of *Livistona chinensis* may be seen and a few Royals begin to make a timid appearance. Coconut palms are occasionally planted but most have an unthrifty look and leaves of sub-standard length, especially in the winter season. No really large number of palm species—that is, of 100 or more—has ever before been tried in this part of Florida. The nearest extensive collection is maintained by Mr. H. Bertram Smith at Melbourne, about 90 miles to the south.

Collecting, I readily admit, is a disease sometimes incurable, no matter whether you collect postage stamps, books, antiques or palms. You beg, you buy, and I trust you don't steal, but you do everything short of it to expand your collection. The palms here were mainly acquired from upward of thirty different nurseries; others were grown here from seed, and still others were obtained from botanical gardens or from friends. I am greatly indebted to many persons for both plants and seed, and would certainly make individual acknowledgment here were it not for fear of overlooking someone.

I append a list of the palms now being cultivated here for two reasons: (1) so that the reader may know exactly what plants are under discussion and (2) as a continuation of the Society's effort to ascertain what palms are being cultivated where by recording lists of those in the botanic gardens and in private collections. The binomials in the list are substantially correct, having been reviewed by Dr. Moore. Very likely the name *Ptychosperma Macarthuri* may strike someone as obsolete and only a synonym for the palm we have known for some years as *Actinophloeus Macarthuri*; the former name is listed because the species is currently being referred to the genus Ptychosperma. There is no certainty that the names, however good their taxonomic standing, have been applied to the proper plant in every case, for here in Florida, as elsewhere in the world, there is more than just a suspicion that we are cultivating some palms under the names of others. One such doubtful palm is the one we denominate *Veitchia Joannis*, though the doubts may soon be resolved; but I received it by that name and so list it. Wherever there is some perplexity as to species, "sp." (plural "spp.") has been substituted for the specific name under the known generic head.

List of Palms at 2514-18 S. Peninsula Drive Daytona Beach, Florida

The figures in parentheses signify the number of individuals either growing wild or planted to date.

The unnumbered palms, most of which will be set out this year, are still in containers.

Acanthophoenix
rubra

Acrocomia
aculeata (2)
armentalis
mexicana (1)
Totai (1)
spp. (2)

Adonidia
Merrillii (16)

Aiphanes
acanthophylla (1)
caryotaefolia (1)
Lindeniana (2)

Archontophoenix
Alexandrae (4)
Cunninghamiana (2)

Areca
Cathecu (1)
concinna
triandra (2)
sp. (FTG 208, Langlois)
spp.

Arecastrum
Romanzoffianum (7)

Arenga
Engleri (1)
pinnata (1)

Arikuryroba
schizophylla (1)

Attalea
spp.

Bactris
major
sp.

Bentinckia
nicobarica

Bismarckia
nobilis (1)

Borassus
flabellifer

Brahea
dulcis

Butia
capitata (4)
eriospatha (1)

Calamus
sp.

Caryota
Cumingii (1)
mitis (4)
urens (2)
sp. ("plumosa")

Ceroxylon
sp.

Chamaedorea
cataractarum (1)
costaricana (1)
erumpens (12)
fragrans (1)
geonomiformis (1)
Klotzschiana (1)
oblongata (1)
Seifrizii (1)
stolonifera (1)
Tepejilote (2)
Wendlandiana (2)
spp. (4)

Chamaerops
humilis (2)

Chrysalidocarpus
lucubensis
lutescens (5)
madagascariensis
sp. "Soledad" (2)

Coccothrinax
argentata (1)
argentea
crinita (2)
fragrans (1)
Martii
Miraguama
Miraguama *var.* novo-geronensis
Yuruguana
sp. "barbadensis"
sp. (1)

Cocos
nucifera (5)

Collinia
elegans (2)

Colpothrinax
Wrightii

Copernicia
australis
cerifera
Torreana

Corypha
elata
umbraculifera (1)

Cryosophila
Warscewiczii (1)
sp. (1)

Cyrtostachys
lakka

Desmoncus
Schippii

Dictyosperma
album (1)
album var. rubrum (1)

Didymosperma
nanum

Drymophloeus
Beguinii (1)

Elaeis
guineensis (3)

Erythea
armata
edulis

Euterpe
edulis (1)
Gaussia
attentuata
Guilielma
Gasipaes (1)
Hedyscepe
Canterburyana (1)
Heterospathe
elata
Hexopetion
mexicanum (2)
Howea
Belmoreana (1)
Forsteriana (2)
Hyphaene
sp.
Jubaea
spectabilis
Latania
borbonica (4)
Licuala
amplifrons
grandis (2)
peltata (1)
spinosa (1)
Livistona
australis (1)
chinensis (5)
chinensis *var.* subglobosa
cochinchinensis (2)
rotundifolia (1)
Mascarena
lagenicaulis
Verschaffeltii (3)
Mauritia
setigera
Metroxylon
amicarum (1)
Nephrosperma
Vanhoutteanum
Normanbya
Normanbyi
Oncosperma
sp.
Opsiandra
Maya (7)
Orbignya
Cohune (1)
Guacuyule
speciosa (4)
Parajubaea
cocoides (1)
Paurotis
Wrightii (1)
Phoenix
abyssinica (1)
canariensis (4)
dactylifera (1)
humilis (1)
pusilla (2)
Roebelenii (5)
reclinata (11)
rupicola (1)
sylvestris (2)
zeylanica (2)
Phytelephas
macrocarpa (1)
Pinanga
Kuhlii (1)
Polyandrococos
caudescens
Pritchardia
Beccariana (1)
pacifica
Thurstonii (2)
Pseudophoenix
saonae
Sargentii (1)
vinifera (1)
Ptychoraphis
augusta
Ptychosperma
elegans (9)
Macarthuri (2)
Sanderianus ? (1)
sp. "Ragey" (2)
spp. (5)
Raphia
Ruffia
Rhapidophyllum
hystrix (1)
Rhapis
excelsa (2)
Reinhardtia
gracilior (1)
Rhopaloblaste
hexandra
Rhopalostylis
Baueri
sapida

Rhyticocos
amara (1)
Roystonea
elata
oleracea (1)
regia (8)
Sabal
causiarum
Etonia (14)
glaucescens (1)
Japa (1)
mauritiaeformis (1)
mayarum (1)
mexicana
nematoclada (1)
Palmetto (42)
parviflora (1)
Rosei
umbraculifera
sp.
Scheelia
sp. (1)
Serenoa
repens (3)
Syagrus
coronata (2)
quinquefolia
sancona (1)
Weddelliana (2)
Thrinax
microcarpa
parviflora (6)
Trachycarpus
Fortunei (1)
Martiana (1)
Trithrinax
acanthocoma
brasiliensis
Veitchia
Joannis ? (2)
Vitiphoenix
sp.
Wallichia
caryotoides ? (1)
Zalacca
edulis (1)
Zombia
antillarum (1)

Wanted • For Sale • Exchange

This advertising is restricted to members of the Society or to firms having a member of it in their organization. Two nurseries have reported very substantial sales of palms directly resulting from ads in PRINCIPES. Ads for the next issue must be received by May 15, 1957. Please confine copy to matter bearing on the palms. Rates: 25c a line or part of a line, straight-run, $1 minimum charge. Kindly remit to the Treasurer, *after* publication, counting the lines to determine the charge.

Rare seedlings: Acrocomia, Aiphanes, Arenga, Colpothrinax, Copernicia, Corypha, Dypsis, Erythea, Howea, Mauritia, Syagrus and many others. No shipping. Vero Beach Nursery, Highway No. 1, near McKee Jungle Garden, 2 miles south of Vero.

Wanted to buy: Seeds of Licuala and Chamaedorea palms, and cycads. O. J. Priebe, Route 1, Box 33, Clermont, Fla.

Chamaedorea cataractarum. A jewel of a single-trunked species. Mexican. The ⅜ths-inch trunk is flecked with light green. The seeds make a beautiful scarlet display. This species makes a wonderful pot plant. The inflorescences of the respective species are distinctly different and easy to pollinate. Plants out of 4″ pots $5.00, including packing. California Jungle Gardens, 11977 San Vicente Blvd., Los Angeles 49, Calif.

Numerous kinds of palms, large and small. U. S. certified free from Mediterranean Fruit Fly and Burrowing Nematodes. Send for list with sizes, prices. Smith's Nursery, P. O. Box 508, Oakland Park, Fla.

Wanted: Seeds or plants of the following palms: *Barbosa pseudococos*, Brazil; *Hemithrinax compacta* or *H. Ekmaniana*. Mr. and Mrs. A. C. Langlois, P. O. Box 1656, Nassau, Bahamas.

Palm Society members: Adonidia, Alexandrae, Fishtail, Areca, Cocos Plumosa, Royal Palm seedlings .45 per doz. *Phoenix Roebelenii* .75 per doz. *Dictyosperma album, Thrinax parviflora* .85 per doz. Min. order $2.00. Include postage, .30 in Fla., .50 other states. Palms listed above in cans to 3′, .20 to .75 – No shipping in cans. I am interested in exchanging palm seeds and plants. Edward J. Campbell, Box 166, Goulds, Fla.

Sturdy, field grown PALMS at reasonable wholesale prices. 5,000 in excellent condition. Royals, 14 ft. to 18 ft.; Fishtails, 10 ft. to 14 ft.; Arecas, 8 ft. to 10 ft., at wholesale prices. We dig and load on your truck. Santa Lucea Grove, Box 326, Stuart, Florida, F. C. Baker, Tel. 417-J.

Wish to exchange plants of uncommon palms. Write for list. Wish to buy copy of Blatter's "The Palms of British India and Ceylon" in any condition. Nat J. De Leon, 8300 S. W. 62 Place, Miami, Fla.

Livistona chinensis (Chinese Fan Palm) seedlings grown in 2½″ and 3″ pots $20 per 100 F.O.B., $3.50 per 10 postpaid. *Washingtonia robusta* 2 ft. tall, in gallon cans, $1.50 each, 4 for $5 F.O.B. *Phoenix reclinata*, heavy plants in gallon cans, same price as above. Martin J. Wittbold, Nurseryman, 1084 Ridgewood Ave., Holly Hill, Fla.

Wanted – *Chamaerops humilis* palms. What have you got? Please advise sizes, prices. Sevilla Nursery, 10 Sevilla St., St. Augustine, Fla.

Hawkes' "Major Kinds of Palms," bound copies, plus reprints palm articles. Send for free list to Alex D. Hawkes, 625 Temple Hills Dr., Laguna Beach, Calif.

Wanted to buy: One 4 to 8-yr.-old *Heterospathe elata;* also seedlings or older plants of *Livistona decipiens, L. Jenkinsiana, L. Mariae, Copernicia gigas, Syagrus insignis, Kentia australis, Reinhardtia elegans, Nannorhops Ritchieana.* Dent Smith, 2514 S. Peninsula Dr., Daytona Beach, Fla.

Among many other palms we offer the following: *Chamaedorea Seifrizii, Latania Commersonii, Licuala grandis, Livistona rotundifolia.* A complete list will be ready for mailing about June 1st. No shipping to California. Nursery closed on Tuesdays. Fantastic Gardens, 9550 S. W. 67th Ave., South Miami 43, Fla.

The first issue of PRINCIPES (Vol. 1, No. 1) has been exhausted. If you do not wish to preserve your copy, will you please donate it to The Palm Society, c o Mrs. L. H. Wait, 7229 S. W. 54th Ave., Miami 43, Fla.

Wanted to buy: Seeds of unusual palms and cycads. E. Moore, 1159 Missouri, San Diego 9, California.

Wish to buy good small specimens of *Chamaerops humilis, Mascarena lagenicaulis* (bottle palm), *Syagrus Weddelliana*, true *Phoenix rupicola*. W. W. Hargert, 195 Halifax Dr., Ormond Beach, Fla.

Member in Japan wishes to purchase used copy Dahlgren's "Index of American Palms." Please address his daughter: Miss Toshiko Satake, 1239½ W. 31st St., Los Angeles 7, Calif.

Photo by Edwin Johnston

The long-leaved palm in the background is an unidentified species of Raphia growing at the edge of a large and notable grove of royal palms in the McKee Jungle Garden near Vero Beach, Fla. The specimen is remarkable for its northern location.

This Raphia leaf from the palm illustrated above measured 27 feet long. It was upended by a tractor on a very windy day and is here being held upright by Ed Johnston, on roof. Another leaf from the same palm measured 29 feet, and others appear to be still longer.

Photo by Dent Smith